



FORTINET®



FortiOS™ Handbook - Managing Devices

VERSION 6.0.1

**FORTIOS
VERSION
6.0**



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FortiOS™ Handbook - Managing Devices

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Change Log

Date	Change Description
March 29, 2018	FortiOS 6.0 document release. See "What's new in FortiOS 6.0" on page 5.
June 1, 2018	FortiOS 6.0.1 document release. See "What's new in FortiOS 6.0" on page 5.

Introduction

Welcome and thank you for selecting Fortinet products for your network protection.

This chapter contains the following topics:

[Before you begin](#)

[How this guide is organized](#)

[What's new in FortiOS 6.0](#)

Before you begin

Before you begin using this guide, please ensure that:

- You have administrative access to the web-based manager and/or CLI.
- The FortiGate unit is integrated into your network.
- The operation mode has been configured.
- The system time, DNS settings, administrator password, and network interfaces have been configured.
- Firmware, FortiGuard Antivirus and FortiGuard Antispam updates are completed.
- Any third-party software or servers have been configured using their documentation.

While using the instructions in this guide, note that administrators are assumed to be super_admin administrators unless otherwise specified. Some restrictions will apply to other administrators.

How this guide is organized

This handbook chapter contains the following sections:

[Managing “bring your own device”](#) describes device monitoring, devices, device groups, and device policies. The administrator can monitor all types of devices and control their access to network resources.

What's new in FortiOS 6.0

The following list contains new device management features added in FortiOS 6.0. Click on a link to navigate to that section for further information.

- ["Device organization, device categories, and device types" on page 8](#)

Managing “bring your own device”

FortiOS can control network access for different types of personal mobile devices that your employees bring onto your premises. You can:

- identify and monitor the types of devices connecting to your networks, wireless or wired
- use MAC address based access control to allow or deny individual devices
- create security policies that specify device types
- enforce endpoint control on devices that can run FortiClient Endpoint Control software

This chapter contains the following sections:

[Device monitoring](#)

[Device Groups](#)

[Controlling access with a MAC Address Access Control List](#)

[Security policies for devices](#)

Device monitoring

The FortiGate unit can monitor your networks and gather information about the devices operating on those networks. Collected information includes:

- MAC address
- IP address
- operating system
- hostname
- user name
- how long ago the device was detected and on which FortiGate interface

You can go to **User & Device > Device Inventory** to view this information. Mouse-over the **Device** column for more details.

Edit	Delete	Refresh	Search	By Type	By Interface	Alphabetically	Total Devices Tracked: 47
Status	Device	OS	User	IP Address	Interface		
Online	00:12:7f:4d:4d:97				wan1		
Online	00:14:a9:52:23:82				wan1		
Online	amoffitt-pc	Windows / 7, 8 (x86)		172.20.120.51	wan1		
Online	DAHLIA			172.20.121.150	wan1		
Offline	00:09:0f:09:de:12			172.20.121.2	wan1		
Offline	00:0c:29:07:ae:75				wan1		

Depending on the information available, the Device column lists the Alias or the MAC address of the device. For ease in identifying devices, Fortinet recommends that you assign each device an Alias.

Device monitoring is enabled separately on each interface. Device detection is intended for devices directly connected to your LAN ports. If enabled on a WAN port, device detection may be unable to determine the

operating system on some devices. Hosts whose device type cannot be determined passively can be found by enabling active scanning on the interface.

You can also manually add devices. This enables you to ensure that a device with multiple interfaces is displayed as a single device.

To configure device monitoring

1. Go to **Network > Interfaces**.
2. Edit the interface that you want to monitor devices on.
3. In **Networked Devices**, turn on **Device Detection** and optionally turn on **Active Scanning**.
4. Select **OK**.
5. Repeat steps 2 through 4 for each interface that will monitor devices.

To assign an alias to a detected device or change device information

1. Go to **User & Device > Device Inventory** and edit the device entry.
2. Enter an **Alias** such as the user's name to identify the device.
3. Change other information as needed.
4. Select **OK**.

To add a device manually

1. Go to **User & Device > Custom Devices & Groups**.
2. Select **Create New > Device**.
3. Enter the following information:
 - Alias (required)
 - MAC address
 - Additional MACs (other interfaces of this device)
 - Device Type
 - Optionally, add the device to **Custom Groups**.
 - Optionally, enter **Comments**.
3. Select **OK**.

Custom avatars for custom devices

You can upload an avatar for a custom device. The avatar is then displayed in the GUI wherever the device is listed, such as FortiView, log viewer, or policy configuration. To upload an avatar image, click **Upload Image** on the New Device or Edit Device page of **User & Device > Custom Devices & Groups**. The image can be in any format your browser supports and will be automatically sized to 36 x 36 pixels for use in the FortiGate GUI.

Device offline timeout

A device is considered offline if it has not sent any packets during the timeout period. The timeout can be set to any value from 30 to 31 536 000 seconds (365 days). The default value is 300 seconds (5 minutes). The timer is configurable in the CLI:

```
config system global
```

```
set device-idle-timeout 300
end
```

Device organization, device categories, and device types

A second level of organization shows device category (except for device types not listed below). The categories, along with the devices that belong to those categories, include:

Category	Devices
Android	Android Phone, Android Tablet
BlackBerry	BlackBerry Phone, BlackBerry Playbook
Fortinet	Fortinet Device, FortiCam, FortiFone
iOS	iPad, iPhone
Windows	Windows PC, Windows Phone, Windows Tablet

Syntax

```
config user device
  edit <category>
    set category [none | android-device | blackberry-device | fortinet-device | ios-
      device | windows-device]
  next
end
```

Device Groups

You can specify multiple device types in a security policy. As an alternative, you can add multiple device types to a custom device group and include the group in the policy. This enables you to create a different policy for devices that you know than for devices in general.

To create a custom device group and add devices to it

1. Go to **User & Device > Custom Devices & Groups**.
The list of device groups is displayed.
2. Select **Create New > Device Group**.
3. Enter a **Name** for the new device group.
4. Click in the **Members** field and click a device type to add. Repeat to add other devices.
5. Select **OK**.

Controlling access with a MAC Address Access Control List

A MAC Address Access Control List (ACL) allows or blocks access on a network interface that includes a DHCP server. If the interface does not use DHCP, or if you want to limit network access to a larger group such as employee devices, it is better to create a device group and specify that group in your security policies.

A MAC Address ACL functions as either

- a list of devices to block, allowing all other devices

or

- a list of devices to allow, blocking all other devices

Allowed devices are assigned an IP address. The Assign IP action assigns the device an IP address from the DHCP range. In a list of allowed devices, you can also use the Reserve IP action to always provide a specific IP address to the device.

The **Unknown MAC Address** entry applies to "other" unknown, unlisted devices. Its action must be opposite to that of the other entries. In an allow list, it must block. In a block list, it must allow.

To create a MAC Address ACL to allow only specific devices

1. Go to the SSID or network interface configuration.
2. In the **DHCP Server** section, expand **Advanced**.
DHCP Server must be enabled.
3. In **MAC Reservation + Access Control**, select **Create New** and enter an allowed device's **MAC Address**.
4. In the **IP or Action** column, select one of:
 - Assign IP — device is assigned an IP address from the DHCP server address range.
 - Reserve IP — device is assigned the IP address that you specify.
5. Repeat Steps "Controlling access with a MAC Address Access Control List" on page 9 and "Controlling access with a MAC Address Access Control List" on page 9 for each additional MAC address entry.
6. Set the **Unknown MAC Address** entry **IP or Action** to **Block**.
Devices not in the list will be blocked.
7. Select **OK**.

To create a MAC Address ACL to block specific devices

1. Go to the SSID or network interface configuration.
2. In the **DHCP Server** section, expand **Advanced**.
DHCP Server must be enabled.
3. In **MAC Reservation + Access Control**, select **Create New** and enter the **MAC Address** of a device that must be blocked.
4. In the **IP or Action** column, select **Block**.
5. Repeat Steps "Controlling access with a MAC Address Access Control List" on page 9 and "Controlling access with a MAC Address Access Control List" on page 9 for each device that must be blocked.
6. Set the **Unknown MAC Address** entry **IP or Action** to **Assign IP**.
Devices not in the list will be assigned IP addresses.
7. Select **OK**.

MAC Authentication Bypass (MAB)

MAC Authentication Bypass allows devices without 802.1X capability (printers and IP phones for example) to bypass authentication and be allowed network access based on their MAC address. This feature requires RADIUS-based 802.1X authentication in which the RADIUS server contains a database of authorized MAC addresses.

MAC Authentication Bypass is configurable only in the CLI and only on interfaces configured for 802.1X authentication. For example:

```
config system interface
  edit "lan"
    set ip 10.0.0.200 255.255.255.0
    set vlanforward enable
    set security-mode 802.1X
    set security-mac-auth-bypass enable
    set security-groups "Radius-group"
  end
end
```

MAC Authentication Bypass is also available on WiFi SSIDs, regardless of authentication type. It is configurable only in the CLI. You need to enable the `radius-mac-auth` feature and specify the RADIUS server that will be used. For example:

```
config wireless-controller vap
  edit "office-ssid"
    set security wpa2-only-enterprise
    set auth usergroup
    set usergroup "staff"
    set radius-mac-auth enable
    set radius-mac-auth-server "ourRadius"
  end
end
```














Security policies for devices

Security policies enable you to implement policies according to device type. For example:
























- Gaming consoles cannot connect to the company network or the Internet.
- Personal tablet and phone devices can connect to the Internet but not to company servers.
- Company-issued laptop computers can connect to the Internet and company servers. Web filtering and antivirus are applied.
- Employee laptop computers can connect to the Internet, but web filtering is applied. They can also connect to company networks, but only if FortiClient Endpoint Security is installed to protect against viruses.

The following images show these policies implemented for WiFi to the company network and to the Internet.

Device policies for company laptop access to the company network

New Policy	
Name	Laptop LAN Access
Incoming Interface	 internal (lan) 
Outgoing Interface	 lan 
Source	 1st floor LAN   employee laptop 
Destination Address	 all 
Schedule	always 
Services	 ALL 
Action	ACCEPT DENY

Device policies for WiFi access to the Internet

New Policy	
Name	WiFi access to Internet
Incoming Interface	 example-staff (example-wifi) 
Outgoing Interface	 wan1 
Source	 all   Android Phone   Android Tablet   BlackBerry Phone   BlackBerry PlayBook   iPad   iPhone 
Destination Address	 all 
Schedule	always 
Services	 ALL 
Action	ACCEPT DENY

The next section explains device policy creation in detail.

Creating device policies

Device-based security policies are similar to policies based on user identity:

- The policy enables traffic to flow from one network interface to another.
- NAT can be enabled.
- UTM protection can be applied.

To create a device policy

1. Go to **Policy & Objects > IPv4 Policy** and select **Create New**.
2. Choose **Incoming Interface**, **Outgoing Interface** and **Source** as you would for any security policy.
3. In **Source**, select an address and the device types that can use this policy.
You can select multiple devices or device groups.
4. Turn on **NAT** if appropriate.
5. Configure **Security Profiles** as you would for any security policy.
6. Select **OK**.

Adding endpoint protection

Optionally, you can require that users' devices connecting to a particular network interface have FortiClient Endpoint Security software installed. Devices without an up-to-date installation of FortiClient software are restricted to a captive portal from which the user can download a FortiClient installer. For information about creating FortiClient profiles, see "Endpoint Protection".

To add endpoint protection to a security policy

1. Go to **Network > Interfaces** and edit the interface.
2. In **Admission Control** turn on **Allow FortiClient Connections** and **FortiClient Enforcement**.
3. Optionally, select sources (addresses and device types) to exempt from FortiClient enforcement.
4. Optionally, select destination addresses and services to exempt from FortiClient enforcement.
5. Select **OK**.

FortiOS pushes a FortiClient profile out to the FortiClient software, configuring network protection such as antivirus, application control, and web category filtering. To create these profiles, go to **Security Profiles > FortiClient Profiles**.

FortiClient Endpoint licence updates

FortiClient endpoint licenses for FortiOS 5.6.0 can be purchased in multiples of 100. There is a maximum client limit based on the FortiGate's model. FortiCare enforces the maximum limits when the customer is applying the license to a model.

If you are using the ten free licenses for FortiClient, support is provided on the Fortinet Forum (forum.fortinet.com). Phone support is only available for paid licenses.

Model(s)	Maximum Client Limit
VM00	200
FGT/FWF 30 to 90 series	200
FGT 100 to 400 series	600
FGT 500 to 900 series, VM01, VM02	2,000
FGT 1000 to 2900 series	20,000
FGT 3000 to 3600 series, VM04	50,000
FGT 3700D and above, VM08 and above	100,000

Older FortiClient SKUs will still be valid and can be applied to FortiOS 5.4 and 5.6.



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